

AMENDMENT

IN THE CLAIMS:

1. (Currently Amended) A method of forming a polycrystalline diamond element comprising a body of bonded diamonds with a working surface, wherein a first volume of the body remote from the working surface contains a catalyzing material and a second volume of the body adjacent to the working surface is substantially free of the catalyzing material to a depth from the working surface, by depleting the catalyzing material from the second volume of the body to a depth from the working surface such that said bonded diamonds exhibit a thermal gradient of the bonded diamonds causes characteristic such that a 950 degrees C temperature at the working surface ~~to be~~ results in a temperature of less than 750 degrees C at the depth.

2. (Currently Amended) The method of Claim 1, wherein the depleting process causes the said bonded diamonds to exhibit a thermal gradient to be greater than 1000 degrees C per mm.

3. (Currently Amended) The method of Claim 2, wherein ~~the~~ said bonded diamonds exhibit a thermal gradient is greater than 2000 degrees C per mm.

4. (Original) The method of Claim 1, wherein the second volume of the body has a diamond density higher than elsewhere in the body.

5. (Original) The method of Claim 1, wherein a majority of the catalyzing material remaining in the second volume of the body adheres to surfaces of diamond crystals.

6. (Original) The method of Claim 1 wherein the body is bonded to a substrate of less hard material.

7. (Original) The method of Claim 6 wherein the less hard material is cemented tungsten carbide.

8.-10. (Canceled)

11. (Original) The method of Claim 1, wherein the body comprises a plurality of partially bonded diamond crystals and an interstitial matrix, and wherein the part of the interstitial matrix located within the first volume contains the catalyzing material, and the part of the interstitial matrix located within the second volume is substantially free of the catalyzing material.

12. (Currently Amended) The method of Claim 11, wherein the depleting process causes ~~the~~ said bonded diamonds to exhibit a thermal gradient to be greater than 1000 degrees C per mm.

13. (Currently Amended) The method of Claim 11, wherein the depleting process causes the said bonded diamonds to exhibit a thermal gradient to be greater than 2000 degrees C per mm.

14. (Original) The method of Claim 11, wherein the second volume of the body has a diamond density higher than elsewhere in the body.

15. (Original) The method of Claim 11, wherein a majority of diamond crystals located within the second volume of the body have a surface which is substantially free of catalyzing material.

16. (Original) The method of Claim 11, wherein a majority of the catalyzing material remaining in the second volume of the body adheres to surfaces of the diamond crystals.

17. (Original) The method of Claim 11, wherein the diamond crystals in the second volume remote from the first volume have less catalyzing material adhering to their surfaces than the diamond crystals in the second volume which are adjacent to the first volume.

18. (Original) The method of Claim 11, wherein an amount of catalyzing material within the second volume of the body continuously decreases with distance from the first volume.

19. (Original) The method of Claim 11, wherein an amount of catalyzing material within the second volume of the body increases with increasing distance from the first volume.

20. (Original) The method of Claim 19, wherein the amount of catalyzing material within the second volume increases in steps.

21.-29. (Canceled)